IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Priority Application Serial No. 09/228,705
Priority Filing Date ..... January 12, 1999
Inventor ..... Joseph M. Brand
Assignee ..... Micron Technology, Inc.
Priority Group Art Unit 2826
Priority Examiner ..... Alexander O. Williams
Attorney's Docket No. MI22-1939
Title: Integrated Circuit Device (As Amended)

PRELIMINARY AMENDMENT

To: Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

From: D. Brent Kenady (Tel. 509-624-4276; Fax 509-838-3424)
Wells St. John P.S.
601 W. First Avenue, Suite 1300
Spokane, WA 99201-3828

Sir:

Please enter the following amendments prior to examining the above-identified application.

AMENDMENTS

In the Title:

Please replace the title with the following: Integrated Circuit Device.

In the Specification

At page 1, before the "Technical Field" insert the following:

RELATED PATENT DATA

This patent resulted from a continuation application of U.S. Patent Application Serial No. 09/228,705, filed January 12, 1999, entitled "Integrated Circuit Device, Synchronous-Link Dynamic Random Access Memory Device", naming Joseph M. Brand as inventor, which is a divisional application of U.S. Patent Number 6,008,074 issued December 28, 1999, entitled "Integrated Circuit Device, Synchronous-Link Dynamic Random Access Memory Device, Method of Forming An Integrated Circuit Device and Method of Forming a Synchronous-Link Dynamic Random Access Memory Edge-Mounted Device", naming Joseph M. Brand as inventor, the disclosure of which is incorporated by reference.

In the Claims

Please cancel claims 1-40 without prejudice. Please add the following new claims 41-61.

NEW CLAIMS:

41. (New) An integrated circuit device comprising:

a semiconductor die comprising synchronous-link dynamic random access memory circuitry;

a heat sink thermally coupled with to the semiconductor die; and

a housing encapsulating at least a portion of the heat sink.

42. (New) The integrated circuit device according to claim 41 further comprising at least one lead coupled with the semiconductor die and the housing encapsulates at least a portion of the at least one lead.

43. (New) The integrated circuit device according to claim 41 wherein the heat sink comprises:

a body; and

at least one lead coupled with the body and configured to dissipate heat from the semiconductor die externally of the housing.

44. (New) The integrated circuit device according to claim 43 wherein the housing encapsulates at least a portion of the at least one lead.

45. (New) The integrated circuit device according to claim 41 wherein the housing encapsulates substantially an entirety of the heat sink.

46. (New) The integrated circuit device according to claim 41 wherein the housing surrounds the heat sink and the semiconductor die.

47. (New) The integrated circuit device according to claim 41 wherein the housing encapsulates the semiconductor die.

48. (New) An integrated circuit device comprising:

a housing enclosing a semiconductor die comprising memory circuitry; and

a heat sink positioned in heat-receiving relation with the semiconductor die and configured to release heat outside the housing.

49. (New) The integrated circuit device according to claim 48 wherein the heat sink comprises at least one lead configured to conduct heat externally of the housing.

50. (New) The integrated circuit device according to claim 48 wherein the housing forms one of a vertical surface mounted package and a horizontal surface mounted package.

51. (New) The integrated circuit device according to claim 48 wherein the housing comprises a first housing enclosing the semiconductor die and a second housing enclosing the first housing and at least partially enclosing the heat sink.

52. (New) The integrated circuit device according to claim 48 wherein the housing comprises a first housing enclosing the semiconductor die and a second housing enclosing the first housing and the heat sink.

53. (New) An integrated circuit device comprising:

a first lead frame;

a semiconductor die secured to the first lead frame;

a second lead frame comprising a heat sink thermally coupled with the semiconductor die; and

a housing formed about at least portions of the semiconductor die and heat sink.

54. (New) The integrated circuit device according to claim 53 wherein the housing comprises an encapsulant housing.

55. (New) The integrated circuit device according to claim 53 wherein the semiconductor die comprises memory circuitry.

56. (New) The integrated circuit device according to claim 53 wherein the housing is configured to provide portions of the first lead frame and second lead frame outwardly exposed relative to the housing.

57. (New) The integrated circuit device according to claim 56 wherein the housing comprises a plurality of sides, and wherein the portions of the first and second lead frames extend from the same side.

58. (New) The integrated circuit device according to claim 53 wherein the portions of the first and second lead frames are bent to provide horizontal mounting of the integrated circuit device.

59. (New) The integrated circuit device according to claim 53 wherein the housing forms one of a vertical surface mounted package and a horizontal surface mounted package.

60. (New) The integrated circuit device according to claim 53 wherein the housing encapsulates an entirety of the semiconductor die.

61. (New) The integrated circuit device according to claim 53 wherein the housing encapsulates an entirety of the semiconductor die and the heat sink.

REMARKS

Applicant has cancelled claims 1-40. Applicant hereby adds new claims 41-61 for full consideration by the Examiner.

The Examiner is requested to phone the undersigned if the Examiner believes such would facilitate prosecution of the present application. The undersigned is available for telephone consultation at any time during normal business hours (Pacific Time Zone).

Respectfully submitted,

Dated: 2-5-02

By: ______________________

D. Brent Kenady
Reg. No. 40,045

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Title: Integrated Circuit Device (As Amended)

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING PRELIMINARY AMENDMENT

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In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

Claims 1-40 have been cancelled without prejudice. There are no amendments to the claims.

-END OF DOCUMENT-

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Assistant Commissioner for Patents
Washington, D. C. 20231
Attention: Official Draftsman

SUBSTITUTE DRAWING REQUEST

Please enter the enclosed substitute formal drawings in the above-referenced application in place of drawings originally filed. The content of the drawings are identical to those now on file in this application. A Red-line drawing of Fig. 2 is submitted herewith along with a corrected substitute drawing.

Acknowledgment of receipt of the formal drawings and their acceptance into the file is requested.

Respectfully submitted,

Date: 2-5-02 By: _____

D. Brent Kenady
Reg. No.: 40,045
CUSTOMER NO. 021567

Enclosures: *5 Sheets of Formal Drawings, Figs. 1-11.*
1 Sheet of Red-Line Drawings Figs. 1-3

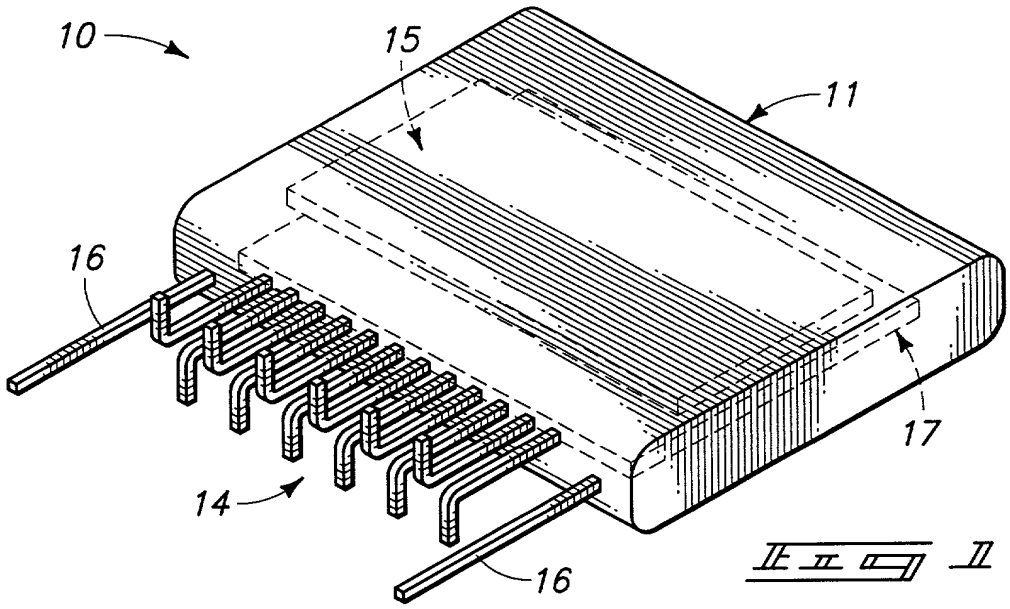


Fig 1

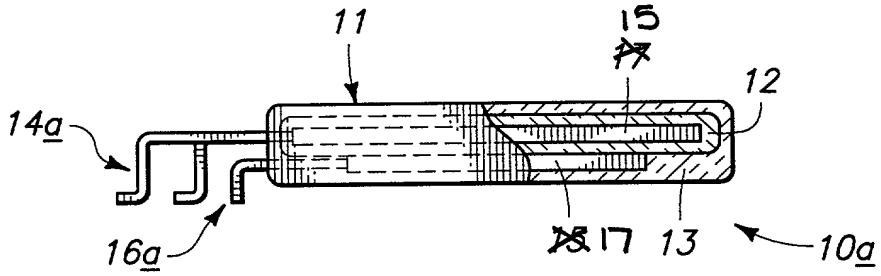


Fig 2

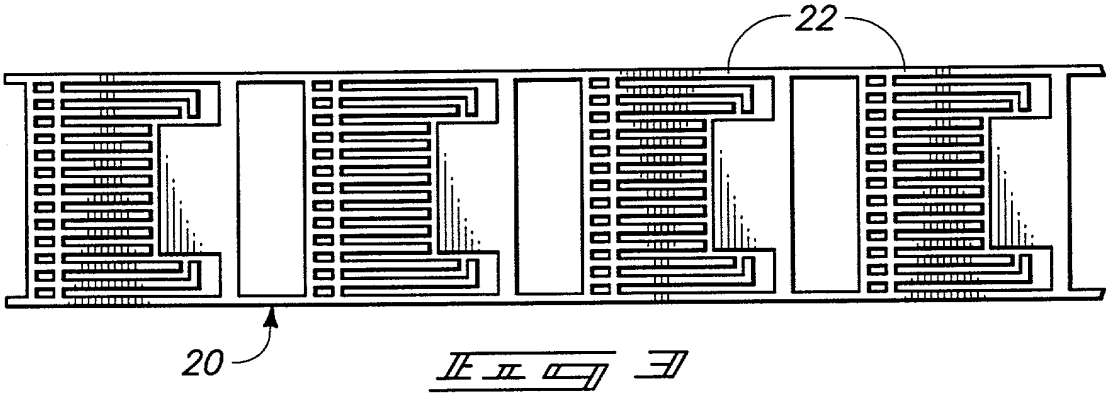
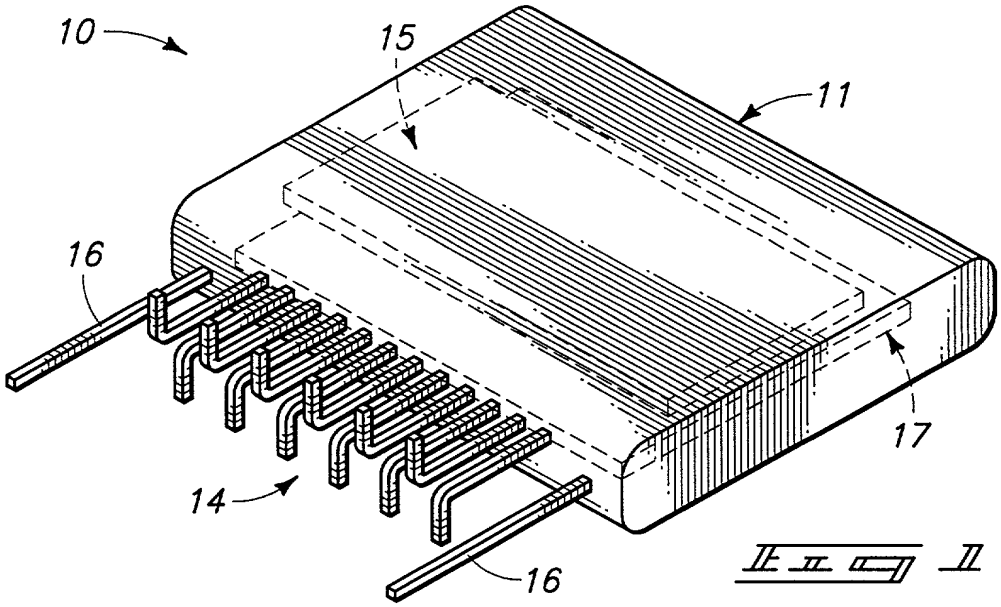
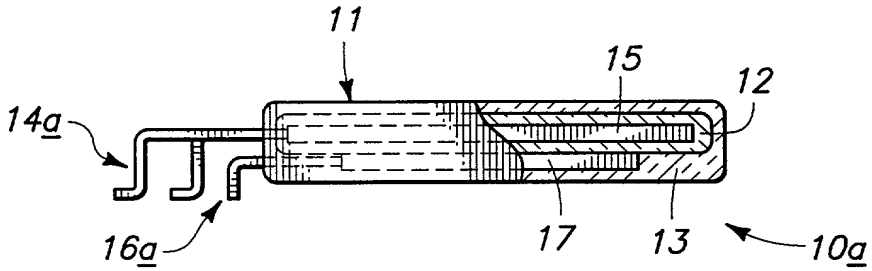


Fig 3



Фиг 1



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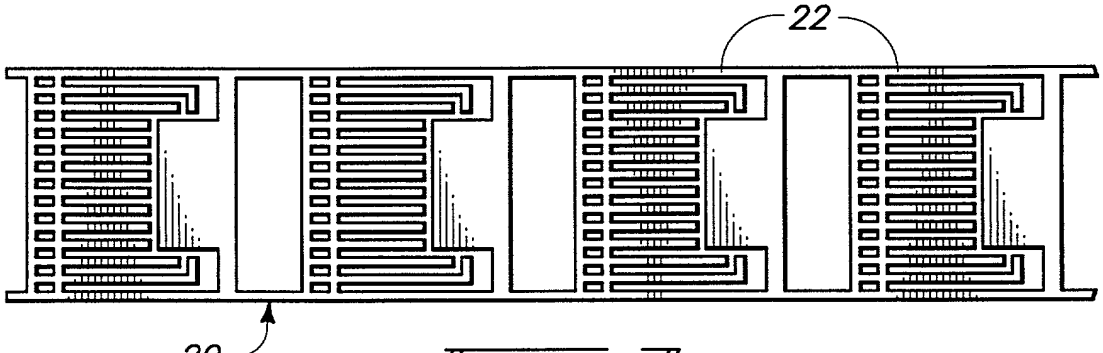

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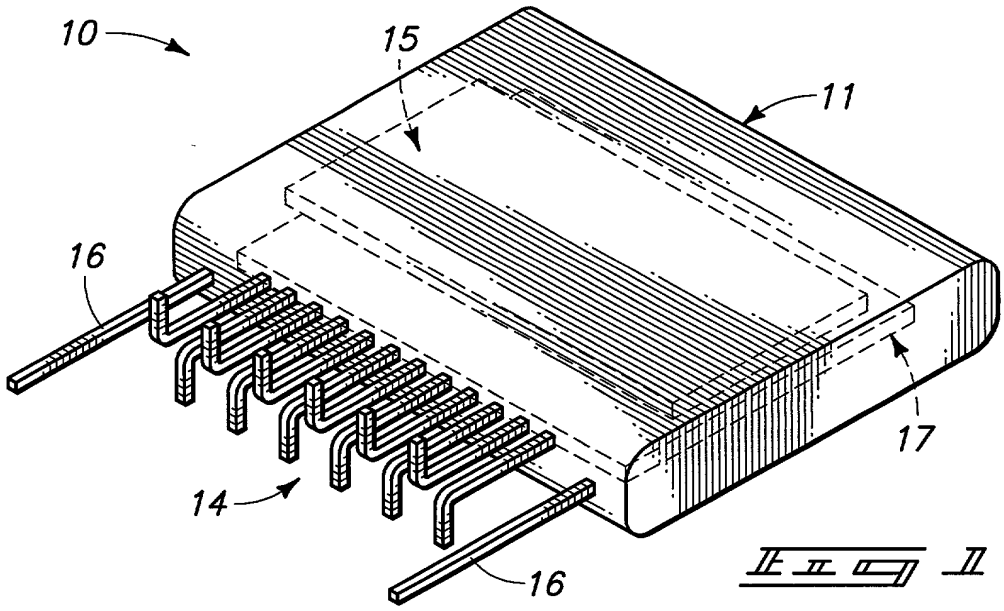

Fig 1

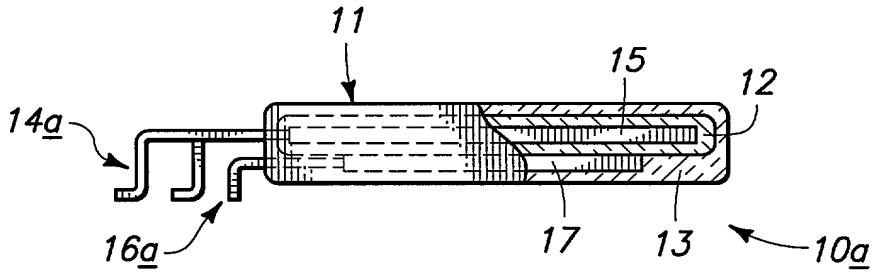

Fig 2

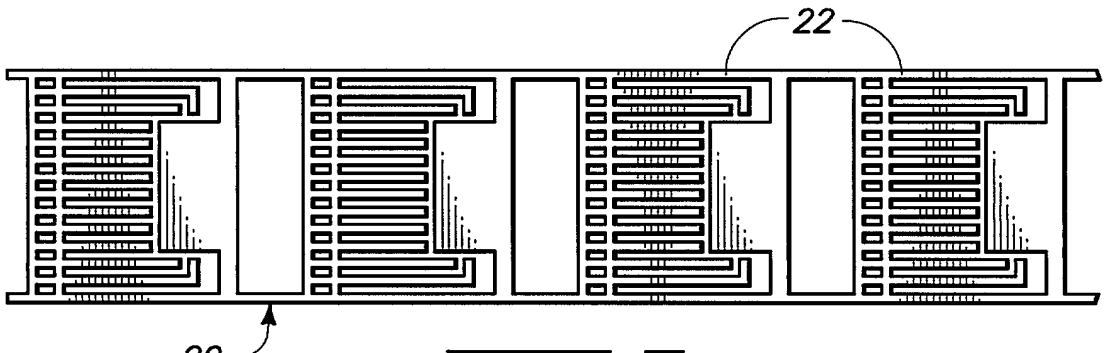

Fig 3

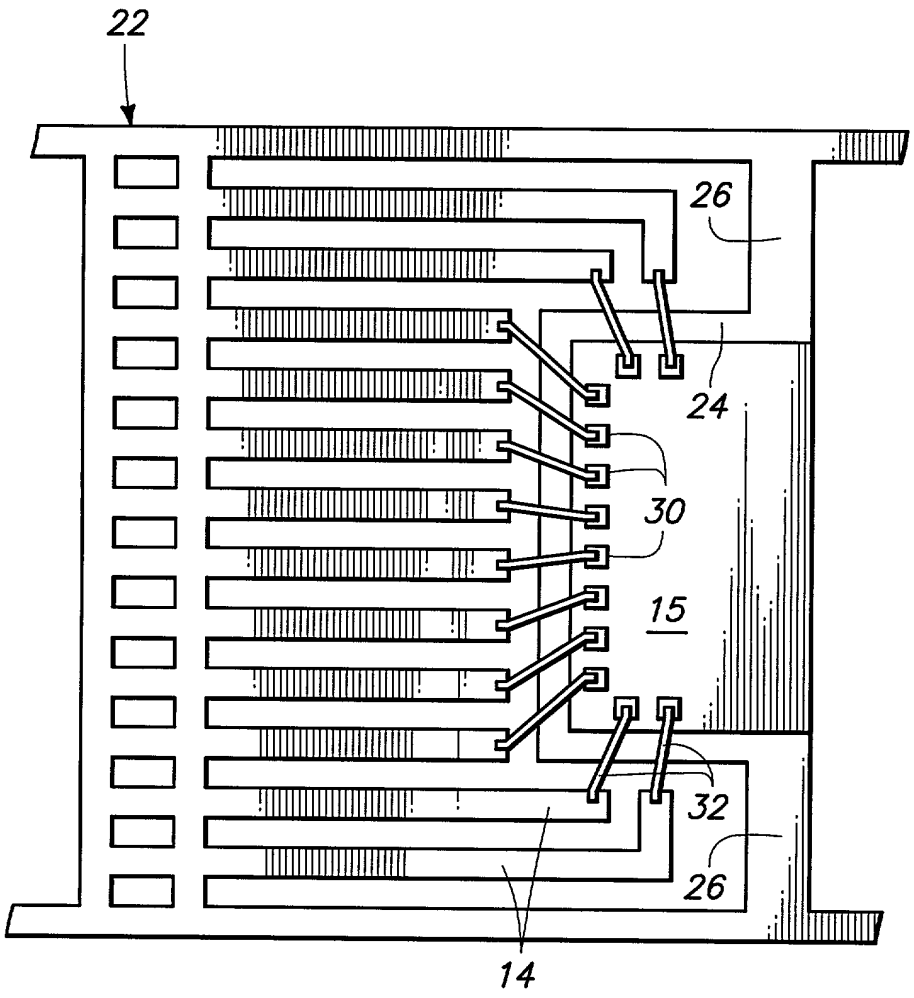

Fig 4

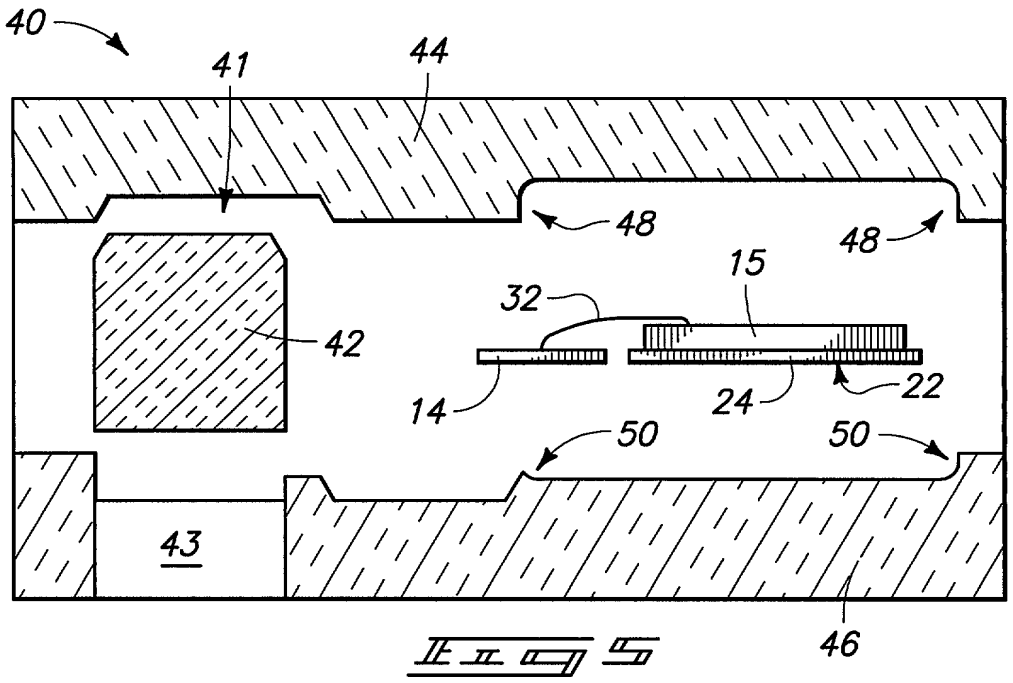

Fig. 5

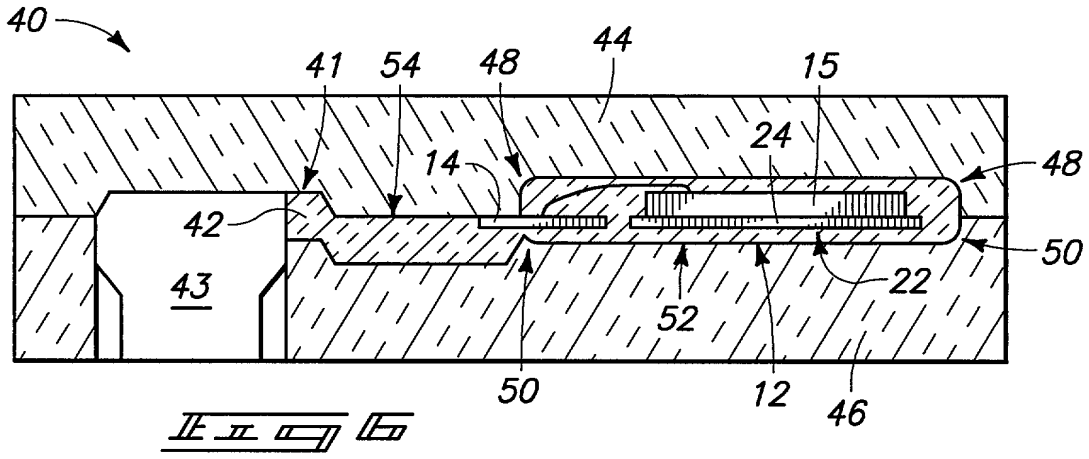

Fig. 6

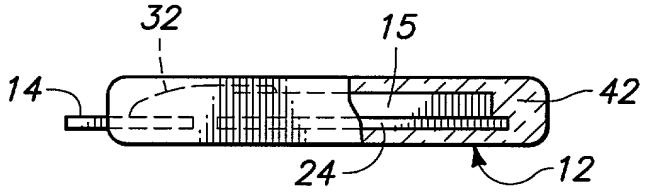

Fig. 7

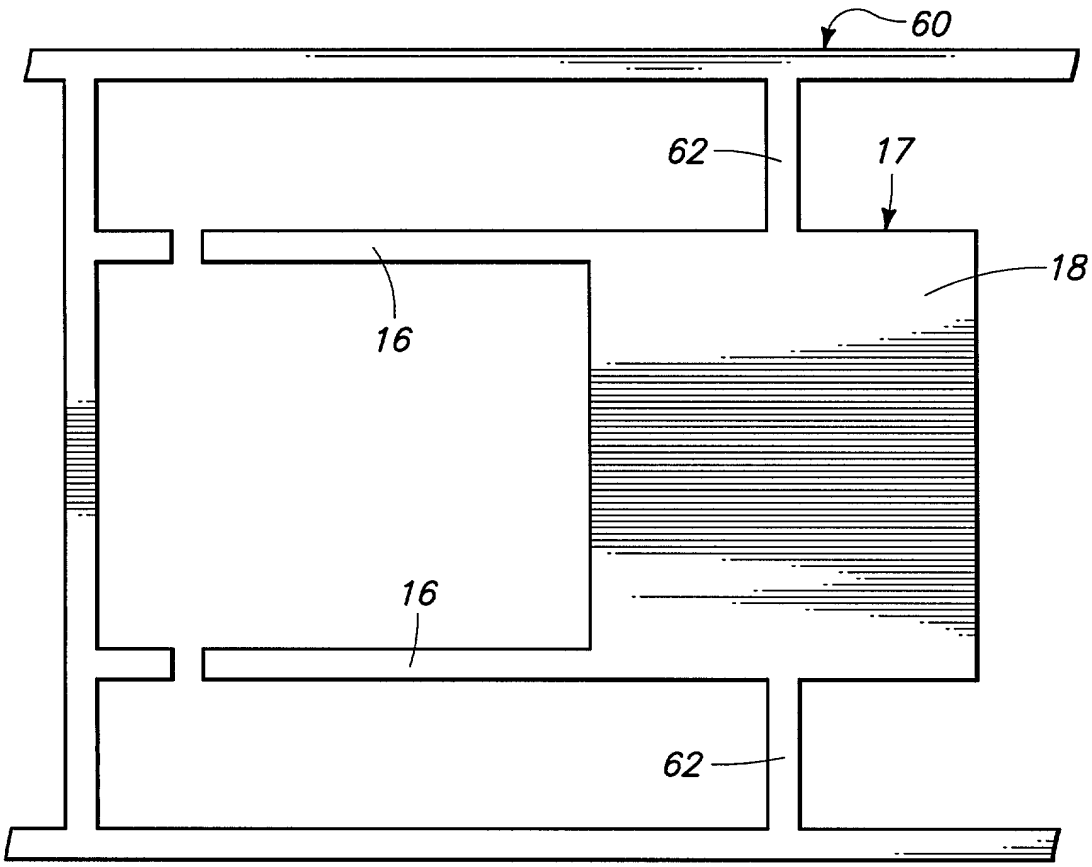

FIG 8

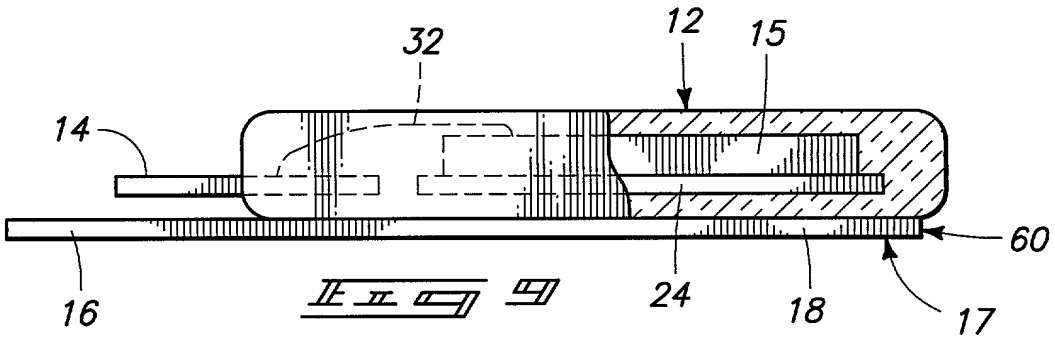

Fig 9

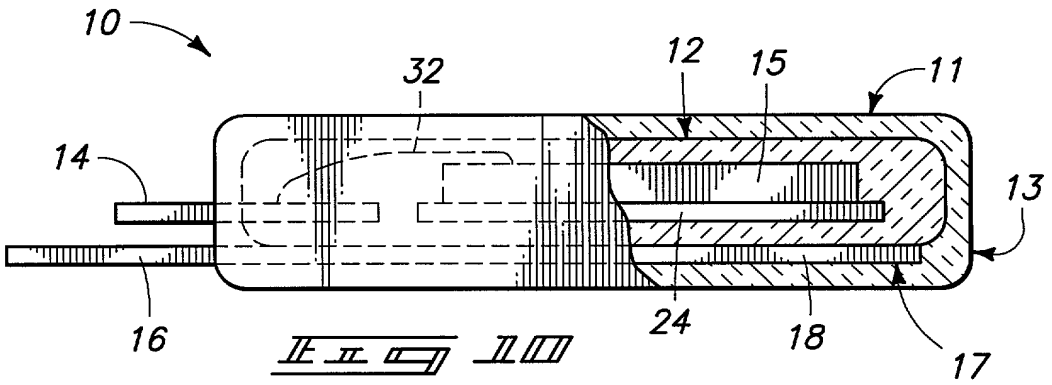

Fig 10

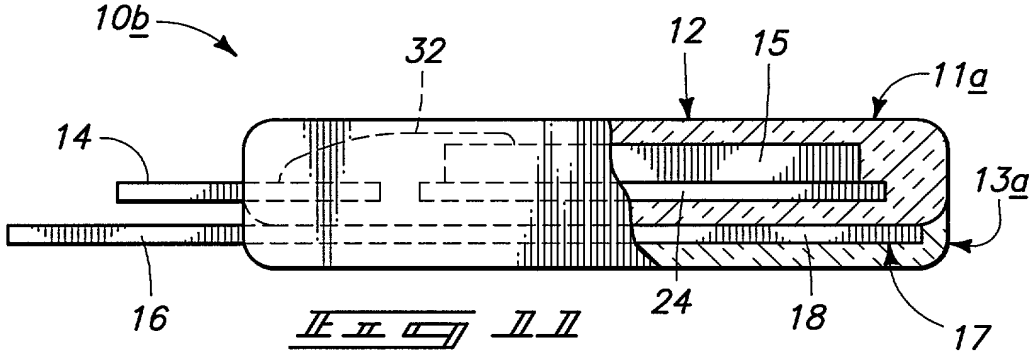

Fig 11